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(54) Abstract Title
A portable water dispenser for making beverages

(57) A portable water dispenser comprising a reservoir 1 for storing water, a pressure pump 8 for pressurising the water supply to make a beverage, and a primer pump 2 for pumping water from the reservoir 1 to the pressure pump 2. Preferably, the dispenser is provided with a heat exchanger 10 to heat the water supply before it is used, forms part of a cappuccino/espresso coffee machine, and the primer pump 2 can be used to pump water from the reservoir 1 to a tap 13, provided between the two pumps, to drain the system.

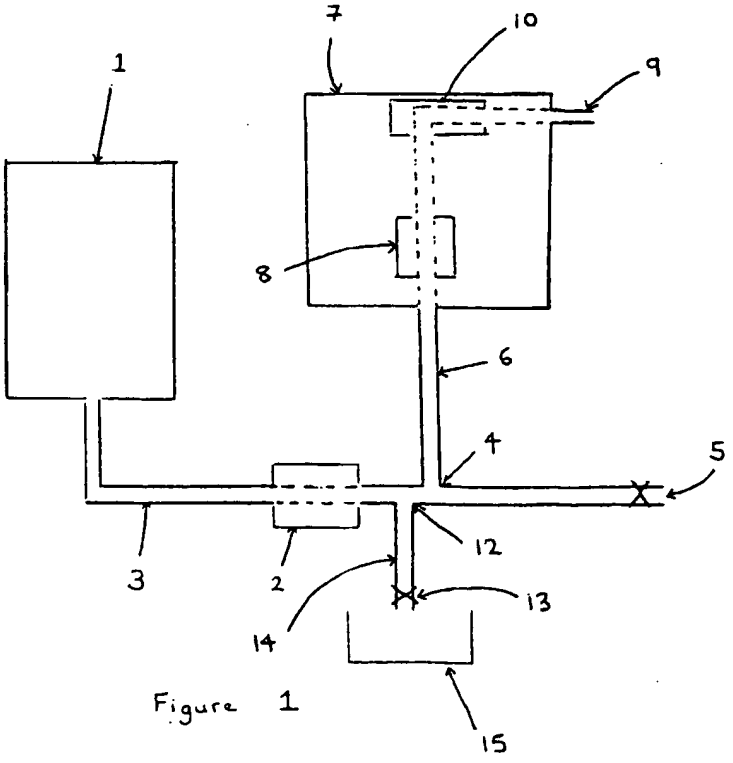

Figure 1

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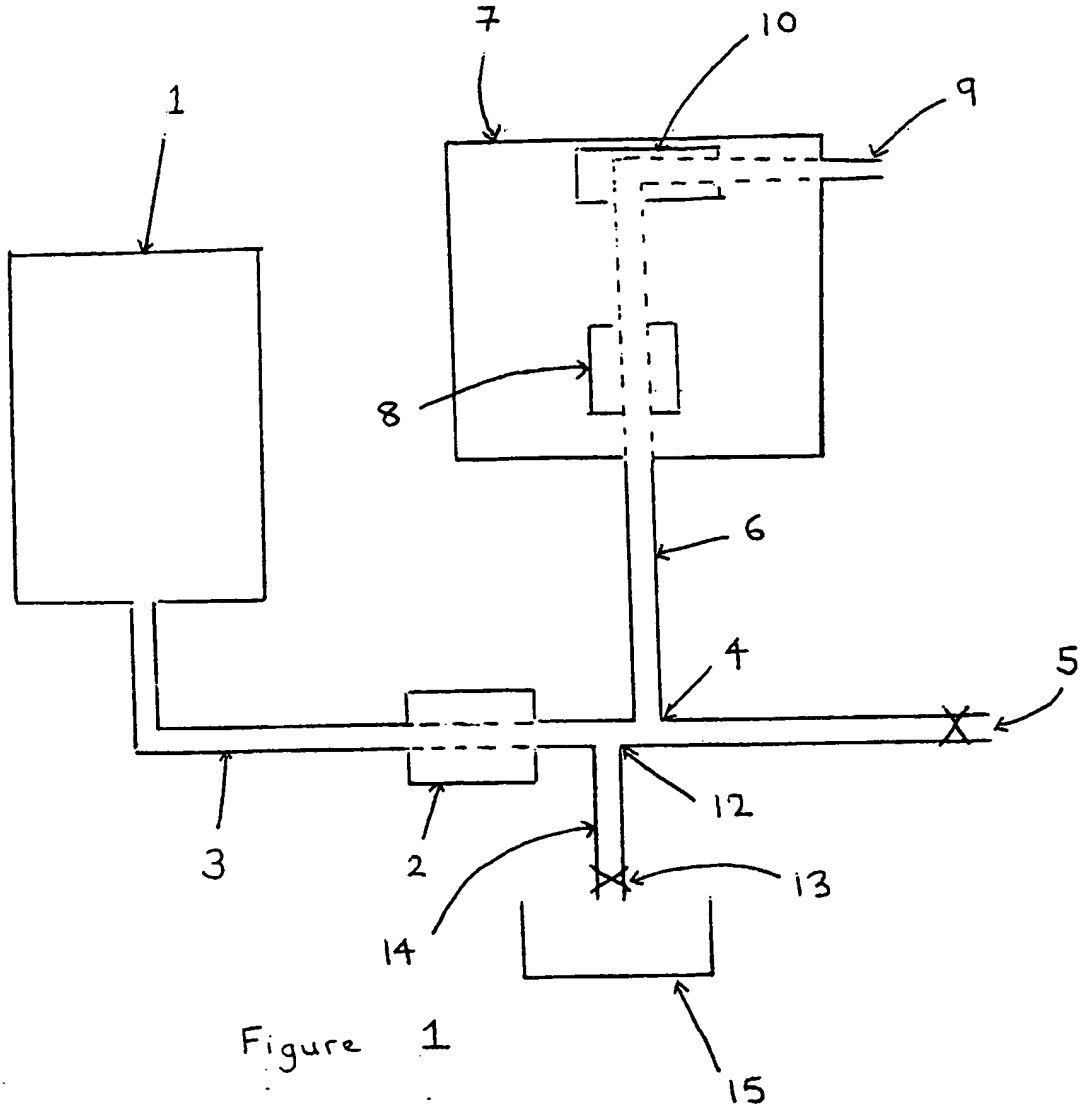

Figure 1

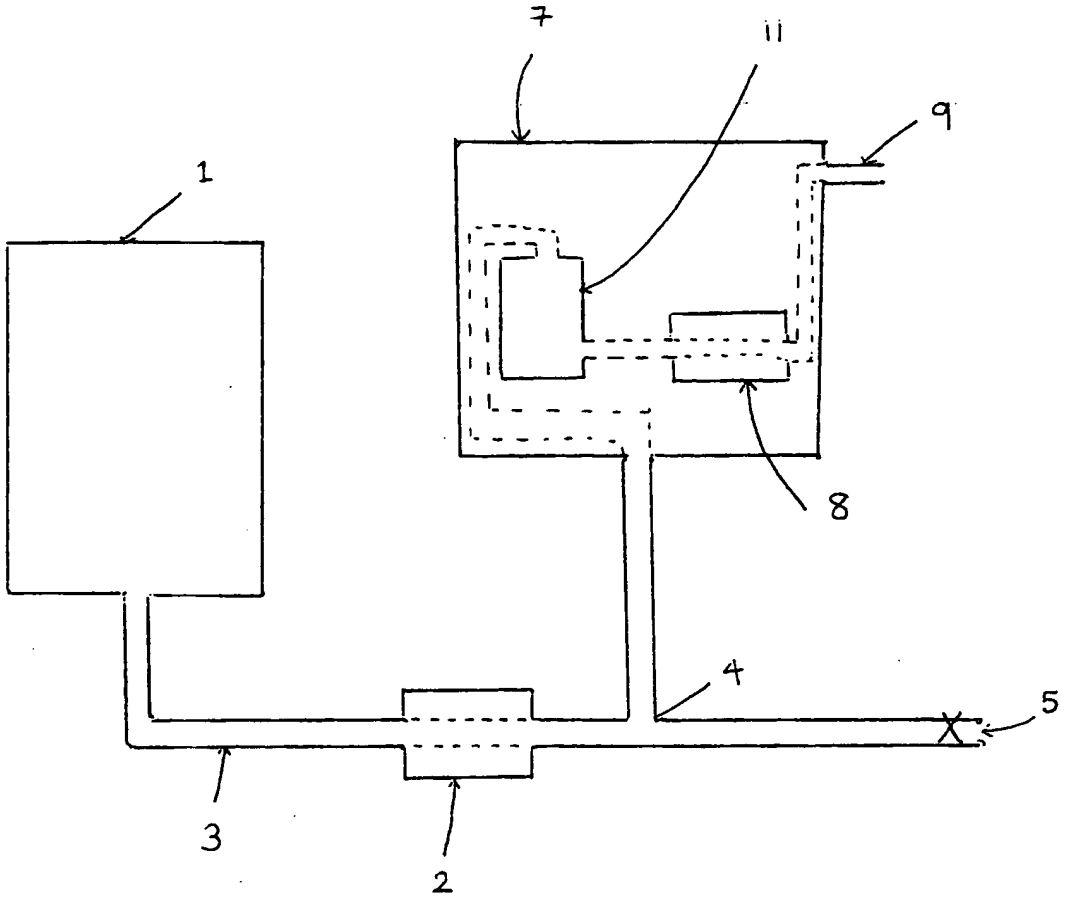

Figure 2

PORTABLE DRINKS SYSTEM

This invention relates to a system for providing drinks. In particular, this invention relates to a portable system for providing drinks in locations where there is no mains water supply.

Typically hot drinks are provided and sold to the public in premises provided with mains water and electricity supplies, for example in cafes and bars. However, it is desirable to be able to provide drinks at locations not provided with a mains water supply, for example in open fields during fun fairs, concerts and the like or at any other location where there will be a number of people requiring refreshment.

In many applications, the drinks-making apparatus in the system requires a pressurised water supply. For example, in a coffee machine, the water must be forced through a tightly packed bed of ground coffee beans and considerable pressure can be required to do this.

It is known to provide a portable drinks-making apparatus, such as a coffee machine, positioned on a vehicle such as a handcart. This allows the public the opportunity to purchase a drink from a convenient location as the

handcart can be moved to a position where there is likely to be people who wish to purchase a drink.

However, these known portable systems can only be positioned in a location where there is access to mains electricity and water supplies. Therefore, in practice, the number of locations at which the handcarts carrying the coffee machine can be located is limited.

Therefore, there is a need for a portable drinks system that can be operated at any location i.e. at locations where there is no mains electricity and water supply.

The present invention aims to provide a portable drinks system that can be used in locations without a mains water supply.

Another aspect of the present invention is to provide a pressurised water supply system for use with a drinks-making apparatus, the system being capable of supplying water under pressure to said apparatus in locations where no mains water supply is provided.

In a first aspect there is provided a portable system for providing drinks, said system including:

a reservoir for storing water;

a drinks-making apparatus having a pressure pump for increasing the pressure of water exiting the drinks-making apparatus; and

a primer pump for pumping water from said reservoir to said pressure pump.

Preferably, the reservoir is connected to the primer pump via tubing e.g. rigid tubing or pipe. Preferably, the tube has a diameter of 8 -22mm but more preferably, a diameter of 15mm. The tubing may be made of any food-safe material e.g. copper or plastics material. In preferred embodiments, the reservoir is provided with level indicating means that can be used by the operator to determine how much water remains in the reservoir.

In preferred embodiments, the drinks-making apparatus is a cappuccino/espresso coffee machine. Such a machine requires that water exiting the machine at the water outlets is at a sufficient pressure to pass through a tightly packed bed of coffee.

In preferred embodiments, the primer pump is a 12V electric pump. Preferably, this pump allows the through-flow of water through the pump when the pump is not operational i.e. is not pumping. Also, it is preferably capable of pumping air. Preferably, the pump is a food-

safe pump.

The main function of the primer pump is to pump water from the reservoir into the pressure pump. Preferably, the primer pump is connected to the pressure pump by a flexible conduit.

In a preferred embodiment, the pressure pump is a 240V electric pump which is able to create sufficient pressure in the water for proper functioning of the drinks-making apparatus, e.g. sufficient pressure such that the water may be forced through a bed of compacted ground coffee beans. Preferably, the pressure pump is a food-safe pump.

The primer pump alone would not normally be capable of producing sufficient pressure.

The 240V electric pump used in a preferred embodiment, is not capable of pumping air. Therefore, the primer pump is needed to force air through the pressure pump preferably into a tank within the drinks-making apparatus, so that the pressure pump can subsequently pump water.

In another preferred embodiment, the pressure pump is a hand-pump of the type commonly used with known cappuccino/espresso coffee machines. In this embodiment,

the primer pump is used to pump water into a boiler that heats the water prior to pumping of the water by the pressure pump.

Preferably, there is provided a drain outlet which allows water from the system, i.e. from the reservoir, the rigid pipe and the flexible conduit, to be purged from the system. This allows for more easy transportation of the portable drinks system.

Preferably, the system is housed within a vehicle. This vehicle could be a handcart or alternatively, and preferably, the vehicle is a motorised vehicle such as a van or three-wheeled scooter. These motorised vehicles are the preferred means for housing and transporting the system as the primer pump can be powered from the vehicle battery.

In embodiments where the pressure pump is an electric pump, the pressure pump is powered from a generator, a battery/inverter or from a mains electricity supply if one is available.

In many drinks-making apparatus, there are multiple heating elements for heating water. In the event that the pressure pump is powered by a generator, it is preferable

to be able to limit the amount of energy used to the minimum required. Therefore, in preferred systems, the drinks-making apparatus has a plurality of heating elements, usually three, and these elements can be switched on and off e.g. independently so that the maximum number of elements can be used when demand for drinks is high and/or a high pressure of steam is required to be maintained and only one need be used where there is minimal demand.

In embodiments where the pressure pump is a hand pump and water is heated in a boiler prior to pumping by the pressure pump, the water is preferably heated using gas provided from a gas cylinder supplied to heating elements in the boiler by a flexible conduit. In embodiments where this system is housed within a vehicle, the gas cylinder is preferably also housed within the vehicle to allow transport of the cylinder along with the portable system. However, in use, to avoid any build up of gas in an enclosed space, the cylinder is preferably removed from the vehicle and locate adjacent to the vehicle.

In a second aspect, this invention provides a method of operating a portable system for providing drinks, the system including a reservoir for storing water, a drinks-making apparatus having a pressure pump for increasing the

pressure of water exiting the drinks-making apparatus and a primer pump for pumping water from said reservoir to said pressure pump, the method including the steps of:

i) activating said primer pump to pump water from the reservoir to the pressure pump;

ii) activating the pressure pump to provide a pressurised water supply to said drinks-making apparatus.

The method preferably further includes the step of deactivating the primer pump once the pressure pump is activated.

In preferred embodiments, the reservoir is initially filled with water from a water source. Preferably, the reservoir is filled with water when the system is in position at the location from which drinks are to be dispensed. This will facilitate the transportation of the system to the location of choice.

In preferred embodiments, the water source is a water tank and water is transferred from the water tank to the reservoir using a second 12V electric pump.

In a third aspect there is provided a water supply apparatus for use in a portable system, the apparatus for

providing water to a drinks-making apparatus having a pressure pump, said water supply apparatus including a reservoir for containing water and a primer pump for pumping water from said reservoir to said pressure pump.

Preferably, the reservoir is connected to the primer pump via tubing e.g. a rigid pipe or flexible conduit. In preferred embodiments, the reservoir is provided with level indicators that can be used by the operator to determine how much water remains in the reservoir.

In preferred embodiments, the primer pump is a 12V electric pump. Preferably, this pump allows the through-flow of water through the pump when the pump is not operational i.e. is not pumping.

Preferably, the primer pump is connected to the pressure pump by a flexible conduit.

Preferably, there is provided a drain outlet which allows water from the reservoir and the pipe and conduit connecting the pumps and reservoir to be purged from the system. This allows for more easy transportation of the portable drinks system.

Preferred embodiments of the present invention will now be

described in detail, by way of example only, with reference to the accompanying drawings in which:

Figure 1 is a schematic view of a first embodiment of the present invention;

Figure 2 is a schematic view of a second embodiment of the present invention.

Figure 1 shows a reservoir, 1, the reservoir preferably being formed of a food quality plastics material. Preferably, the reservoir has a capacity of 70 litres although a greater capacity tank could be used and is provided with a depth probe such that the operator can determine the exact volume of water remaining in the reservoir. In preferred embodiments, the depth probe is coupled to a level indicator gauge positioned so as to be easily viewed by the operator.

The reservoir is connected to a 12V primer pump, 2, via a rigid pipe, 3. Downstream from the primer pump is a T-junction, 4. One arm of the T-junction leads to a drain outlet, 5, the outlet being closed ,e.g. by a stop-cock during operation of the system such that the system is a closed system. However, once dispensing of the drinks is completed, the drain outlet can be opened such that any water remaining in the system can be drained so as to

reduce the weight of the system to facilitate transportation.

The other arm of the T-junction is connected to a flexible conduit, 6, that is connected to a coffee machine, 7. The coffee machine, 7, contains a 240V pressure pump, 8. This pump is incapable of pumping air and therefore, on the start up of the machine, the 12V primer pump,2, is used to pump water from the reservoir, 1, into the 240V pump, 8, within the machine, 7, in order to prime the pressure pump, 8. Once the pressure pump is actively pumping water, the 12V primer pump, 2, can be switched off. This primer pump allows the throughflow of water drawn by the 240V pump, 8, in the coffee machine, 7, when the primer pump, 2, is switched off.

The 240V pressure pump, 8, provides sufficient pressure for the water to exit the coffee machine through at least one water outlet, 9, on the machine at a pressure sufficient to penetrate a tightly packed bed of coffees. Prior to exiting the water outlet, 9, the water passes through a heat exchanger, 10, in order for the water to be heated.

Up-stream from the T-junction, 4, is a second T-junction, 12. The arm of the T-junction, 12, leads to a tap outlet,

13, by way of a flexible tube, 14. The tap outlet is preferably positioned over a sink, 15. On opening of the tap, 13, by the operator, the primer pump, 2, is activated to pump water from the reservoir, 1, to exit the tap outlet, 13. The operator can use this tap and sink to wash their hands or any implements used in the production of coffee drinks.

The coffee machine used in the present invention is already known in the state of the art and thus will not be described any further.

Figure 2 shows a second embodiment of the present invention.

The second embodiment has a reservoir, 1, a primer pump, 2, a rigid pipe, 3, a flexible conduit, 6, a drain outlet, 5, and a T-junction, 4, as described for the first embodiment.

The primer pump, 2, is a 12V electric pump which pumps water from the reservoir, 1, through the rigid pipe, 3, and into a gas heated boiler, 11, situated within the coffee machine, 7.

In other embodiments, this boiler could be heated using

electric elements supplied with energy from a generator or from the mains electricity.

The pressure pump, 8, is a handpump as is known in the art. This handpump is located downstream from the gas heated boiler, 11, and, in order to dispense a drink, the handpump is used to force water under pressure from the boiler, 11, out through the water outlet, 9, of the coffee machine, 7.

This second embodiment may also be provided with a tap outlet and sink as shown in the first embodiment.

The above embodiment is given by way of example only and variations will be apparent to those skilled in the art.

CLAIMS

1. A portable system for providing drinks, said system including:

a reservoir for storing water;

a drinks-making apparatus having a pressure pump for increasing the pressure of water exiting the drinks-making apparatus; and

a primer pump for pumping water from said reservoir to said pressure pump.

2. Apparatus according to Claim 1 wherein the reservoir is provided with level indicating means that can be used by the operator to determine how much water remains in the reservoir.

3. Apparatus according to Claim 1 or Claim 2 wherein the drinks-making apparatus is a cappuccino/espresso coffee machine.

4. Apparatus according to any of the above claims wherein the primer pump is a 12V electric pump.

5. Apparatus according to any of the above claims wherein this pump allows the through-flow of water through the pump when the pump is not operational.

6. Apparatus according to any of the above claims wherein the pump is capable of pumping air.

7. Apparatus according to any of the above claims wherein the pressure pump is a 240V electric pump which is able to create sufficient pressure in the water for proper functioning of the drinks-making apparatus.

8. Apparatus according to any of claims 1 - 6 wherein the pressure pump is a hand-pump of the type commonly used with known cappuccino/espresso coffee machines.

9. Apparatus according to any of the above claims including a drain outlet which allows water to be purged from the system.

10. Apparatus according to any of the above claims wherein the system is housed within a vehicle such as a van or three-wheeled scooter.

11. Apparatus according to any of the above claims wherein the pressure pump is powered from one of: a generator, a battery/inverter or from a mains electricity supply.

12. Apparatus according to any of the above claims wherein the drinks-making apparatus has a plurality of

heating elements and these elements can be switched on and off independently.

13. Apparatus according to any of the claims wherein the water is heated using gas provided from a gas cylinder supplied to heating elements in the boiler by a flexible conduit.

14. A method of operating a portable system for providing drinks, the system including a reservoir for storing water, a drinks-making apparatus having a pressure pump for increasing the pressure of water exiting the drinks-making apparatus and a primer pump for pumping water from said reservoir to said pressure pump, the method including the steps of:

i) activating said primer pump to pump water from the reservoir to the pressure pump;

ii) activating the pressure pump to provide a pressurised water supply to said drinks-making apparatus.

15. Apparatus for use in a portable system, the apparatus for providing water to a drinks-making apparatus having a pressure pump, said water supply apparatus including a reservoir for containing water and a primer pump for pumping water from said reservoir to said pressure pump.

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Claims searched: 1 to 15
Examiner: Dean Parry
Date of search: 17 December 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): B8N (NB, NC, NJH)

Int Cl (Ed.7): A47J (31/00, 31/36, 31/46), B67D (1/00, 1/10)

Other: Online: EPODOC, WPI, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X, A	DE 3940877 A	(FARBER) see figures and WPI abstract.	X: 15
A	EP 0485885 A	(MOLDENHAUR) see figures and WPI abstract.	
A	US 5392694 A	(MULLER) see figures and abstract.	
X, A	US 4830223 A	(PRIEST) see figures and abstract.	X: 15
A	US 4226267 A	(MEACHAM) see figures and abstract.	

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